

## What is Claimed:

- 1                   1.       An electron sensing device comprising  
2                   a cathode for providing a source of electrons, and  
3                   an anode disposed opposite to the cathode for receiving electrons  
4       emitted from the cathode,  
5                   wherein the anode includes a textured surface for reducing halo in the  
6       output signal of the electron sensing device.
- 1                   2.       The electron sensing device of claim 1 wherein  
2                   the textured surface includes a plurality of pits formed in the anode.
- 1                   3.       The electron sensing device of claim 2 wherein  
2                   a pit of the plurality of pits is shaped as a well having a top opening  
3       formed by longitudinal walls in the anode, and  
4                   a bottom surface of the well is disposed longitudinally further from the  
5       cathode than the top opening.
- 1                   4.       The electron sensing device of claim 3 wherein

2                   the top opening of the well is substantially a square opening and the  
3                   bottom surface of the well is dimensionally substantially similar to the square  
4                   opening.

1                   5.       The electron sensing device of claim 2 wherein

2                   the plurality of pits are transversely spaced from each other by a pitch  
3                   value varying from 1.0 micron to 30.0 microns, and

4                   include longitudinal depths varying from a depth to pitch ratio of 0.5 to  
5                   a depth to pitch ratio of 2.0.

1                   6.       The electron sensing device of claim 5 wherein

2                   the plurality of pits are spaced from each other to form an open area  
3                   ratio (OAR) ranging between 70% and 90% in the anode.

1                   7.       The electron sensing device of claim 5 wherein

2                   the anode and cathode include a potential difference to provide an  
3                   initial energy value to the emitted electron, the energy value varying between 1 keV  
4                   and 20keV.

1                   8.       The electron sensing device of claim 2 wherein the electron  
2                   sensing device is one of a hybrid photodiode (HPD), an electron bombarded active  
3                   pixel sensor (EBAPS), an electron bombarded charge coupled diode (EBCCD), an  
4                   electron bombarded metal-semiconductor-metal vacuum phototube (MSMVPT), an  
5                   avalanche photo diode (APD) and a resistive anode.

1                   9.     The electron sensing device of claim 2 wherein  
2                   a microchannel plate (MCP) is disposed between the cathode and  
3 anode.

1                   10.    The electron sensing device of claim 2 wherein  
2                   the anode is formed of semiconductor material and is free-of an anti-  
3 reflection coating (ARC).

1                   11.    The electron sensing device of claim 2 wherein  
2                   the longitudinal distance between the cathode and anode is larger than  
3 a pitch value of the plurality of pits transversely spaced from each other.

1                   12.    An electron sensing device comprising  
2                   a cathode for providing a source of electrons, and  
3                   an anode disposed opposite to the cathode for receiving electrons  
4 emitted from the cathode,

5                   wherein the anode includes a top surface, and

6                   the top surface includes a plurality of openings, each defined by a base  
7 of an inverted pyramid, for reducing halo in the output signal of the electron sensing  
8 device.

1                   13.    The electron sensing device of claim 12 wherein  
2                   the base of the inverted pyramid is substantially a square at the top  
3                   surface of the anode, and  
4                   walls formed in the anode are extended from the base to form an apex  
5                   of the inverted pyramid, the apex disposed longitudinally further from the cathode  
6                   than the base of the inverted pyramid.

1                   14.    The electron sensing device of claim 13 wherein  
2                   the base of the inverted pyramid is a 6 micron square, and  
3                   the apex of the inverted pyramid is longitudinally disposed 4.091  
4                   microns from the base.

1                   15.    The electron sensing device of claim 12 wherein  
2                   the plurality of openings are transversely spaced from each other by a  
3                   pitch of 6.0 microns and forms an OAR ranging between 70% and 90%.

1                   16.    The electron sensing device of claim 12 wherein  
2                   the anode and cathode include a potential difference to provide an  
3                   initial energy value to the emitted electron, the energy value varying between 1 keV  
4                   and 20keV.

1                   17.    The electron sensing device of claim 12 wherein the electron  
2   sensing device is one of a hybrid photodiode (HPD), an electron bombarded active  
3   pixel sensor (EBAPS), an electron bombarded charge coupled diode (EBCCD), an  
4   electron bombarded metal-semiconductor-metal vacuum phototube (MSMVPT), an  
5   avalanche photo diode (APD) and a resistive anode.

1                   18.    The electron sensing device of claim 12 wherein  
  
2                   a microchannel plate (MCP) is disposed between the cathode and  
3   anode.

1                   19.    The electron sensing device of claim 12 wherein  
  
2                   the anode is formed of semiconductor material and is free-of an anti-  
3   reflection coating (ARC).

1                   20.    An electron sensing device comprising  
  
2                   a cathode for providing a source of electrons, and  
  
3                   an anode disposed opposite to the cathode for receiving electrons  
4   emitted from the cathode,

5                   wherein the anode includes a textured surface for reducing halo in the  
6   output signal of the electron sensing device, and

7                   the textured surface includes one of a plurality of pits and a plurality of  
8   inverted pyramids.